

PATENT SPECIFICATION

DRAWINGS ATTACHED

856.223



Date of Application and filing Complete Specification June 12, 1959.

No. 20133/59.

Complete Specification Published Dec. 14, 1960.

Index at acceptance:—Class 61, K2(F:J), W4(F:H:Y).

International Classification:—B25b, g.

COMPLETE SPECIFICATION

A Combination Tool for Manipulating Socket Head Screws

I, SIGFRID HARALD PERSSON, a Subject of the King of Sweden, of Angholmsgatan 1, Gothenburg, Sweden, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a combination tool for manipulating socket head screws.

Hexagon keys for manipulating socket head screws are at present available in different sizes as to cross section and length, each key being constructed in the form of a hexagon rod which at one end is bent at right angles so that when, for example, this end is applied to the socket of a corresponding screw, leverage may be exerted with the free end of the key. Engineers usually need a range of such keys and these are liable to be spread about so that a required key cannot be found. If, however, the keys are kept together, as for example in a pocket, the selection of a particular key for use involves trouble and unwanted delay since frequently all the keys have to be removed from the pocket to enable the required key to be found.

With a view to obviating the above-mentioned disadvantages, the present invention comprises a combination tool in the form of a plurality of hexagon keys of different size pivoted individually at one end of an elongated carrier which is provided with a leaf spring which, when a selected key is moved from a collapsed position to a position of use at right angles to the carrier, co-operates with means on the key at the pivoted end thereof to retain the key in said position.

Reference will now be made to the accompanying drawings which illustrate, by way of example, one embodiment of combination tool according to this invention.

Fig. 1 is a plan view of the combination tool.

Fig. 2 is a side elevation, partially in section.

Fig. 3 is an end view looking in the direction of arrow A, Fig. 1, and illustrates a hexagon key in one position of use.

Fig. 4 is a view similar to Fig. 3 but illustrates the hexagon key in another position of use.

Fig. 5 is a sectional plan view on the line V—V, Fig. 2.

The combination tool illustrated includes an elongated carrier of U-shaped form consisting of a base 1, side walls 2, 3 and partial end walls 4. The carrier is preferably made of thick gauge metal. A plurality of hexagon keys of different sizes are pivotally mounted at each end of the carrier on the shanks of screws 5 which are retained in position on the side walls 2, 3 by nuts 6. In the embodiment, three keys 7 are pivotally mounted on one screw 5 and two larger keys 8 are pivotally mounted on the other screw. As more clearly shown in Fig. 2, each key has a hooked end 9 embracing the shank of its screw 5. The keys of each set are different both in length and cross section from one another. If desired, however, they may be of the same length.

Figs. 1 and 2 show the keys 7, 8 in a collapsed condition in which, within the length of the carrier, the keys 8 overlap the keys 7 which, in turn, rest on an abutment 10. The abutment, in the example, comprises an inverted U-shaped portion of a spring plate 11 mounted on the base wall 1 of the carrier and extending transversely between side walls 2, 3 thereof. The base 1 has an upstruck boss 12 which serves to locate and retain the plate 11 in position. The plate 11 terminates at each end in leaf spring fingers 13, each of which acts on the rounded end 9 of the adjacent key. It will be appreciated that there are three fingers for the keys 7 and two fingers for keys 8. Each key end 9 has a flat 14 which is positioned for engagement by the corresponding spring finger 13 when the key is pivoted into a perpendicular condition

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with respect to the carrier base 1. One of the keys 8 is shown in such a perpendicular position in Fig. 3, the carrier serving as a handle. An alternative position of use for each key is illustrated in Fig. 4 in which one of the keys 8 has been moved from a collapsed position within the length of the carrier to an extended position of use beyond the adjacent end of the carrier and in alignment therewith. Each end wall 4 has a top sloping edge 15, Fig. 4, so that each key when moved into the extended position will engage and be supported by the adjacent part of edge 15. Each key when in either alternative position of use is frictionally engaged by the corresponding spring finger 13. The keys of each set are in close frictional engagement with one another and with the side walls 2, 3 of the carrier.

The combination tool is compact due to the disposition of the keys 7, 8 when in the collapsed position, as illustrated in Figs. 1 and 2. The abutment 10 projects well upwards in the carrier and renders the keys readily accessible for finger manipulation into a position of use. It will be appreciated that the collapsed positions of the keys 7, 8 may be different from those illustrated. For example, the set of keys 7 may overlies the keys 8 which themselves rest on the abutment 10 when in a collapsed position. By removing the nuts 6 and withdrawing the screws 5 detachment, replacement or renewal of the keys may be readily effected.

It is to be understood that the invention is not limited to the details herein-described and illustrated. For instance, the combination tool may be modified to accommodate a different number of keys from that illustrated. Also, although less preferred, the keys may be pivotally mounted on the carrier at one end only thereof.

WHAT I CLAIM IS:—

1. A combination tool for manipulating socket head screws, comprising a plurality of hexagon keys of different size pivoted individually at one end of an elongated carrier which is provided with a leaf spring which, when a selected key is moved from a collapsed position to a position of use at right angles to the carrier, co-operates with means on the key at the pivoted end thereof to retain the key in said position.

2. A tool according to Claim 1, wherein a plurality of different size keys are pivotally

mounted on a common axis at each end of the carrier, the keys pivoted at one end being adapted to overlies the keys pivoted at the other end when the keys are in a collapsed position on the carrier.

3. A tool according to Claim 2, wherein the carrier is U-shaped in cross section and is provided with an abutment on which the lower keys rest when collapsed and which facilitates accessibility of the keys for erection into a position of use.

4. A tool according to Claim 3, wherein the abutment is provided by an inverted U-shaped portion of a spring plate secured within the carrier on the base thereof, said spring plate terminating at each end in leaf spring fingers which act individually on the adjacent ends of the keys.

5. A tool according to Claim 4, wherein an upstanding boss on the carrier base serves to locate and retain the spring plate in position.

6. A tool according to Claim 4 or 5, wherein the pivoted end of each key is hooked and formed with a flat which is positioned for engagement by the corresponding spring finger when the key is pivoted into a perpendicular position with respect to the carrier base.

7. A tool according to any one of the preceding claims, when each key is movable from a collapsed position within the length of the carrier to an extended position of use beyond one end of the carrier and in alignment therewith.

8. A tool according to Claim 7, wherein means is provided to locate each key in the extended position of use.

9. A tool according to Claims 4 and 8, wherein a wall at each end of the carrier has a top edge which is so shaped and positioned that when each key is properly extended it is engaged and supported by said edge.

10. A tool according to any one of the preceding claims, wherein mounting means for the keys facilitates detachment and replacement thereof.

11. A combination tool constructed and adapted for use substantially as hereinbefore described with reference to the accompanying drawings.

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